



# **Souhegan River Instream Flow Pilot Program**

**For the Souhegan River WMPAAC Meeting**

**March 5, 2004**

**By NHDES**

# Topics

- General instream flow protection concepts
- History and summary of the Instream Flow Pilot Program
- Souhegan-specific information and maps
- PISF study and WMP development process
- Role of the TRC and WMPAAC in the PISF and WMP contracting process and program

# General Concepts

- River uses depend on flow
  - Aquatic life (fish)
  - Boating and swimming
  - Fishing
- Riverine ecosystems are adapted to “natural” hydrograph characteristics
  - Life cycles of aquatic organisms
  - Low flows are stressful periods
- Impacts of human consumptive use are greatest during low river flow conditions
- Dams can modify river flows

# Riparian Rights and the Public Trust Doctrine

- Riparian Rights: Owners of streamside property have a right to “reasonable use”
  - No hierarchy of uses; all must share
  - Instream Public Trust uses must be protected
- Public Trust Doctrine: The state holds a public trust for certain instream uses
  - Fishing
  - Biological integrity
  - Swimming and boating

# History and Summary of ISF Protection

- Rivers Management and Protection Program (RSA 483) enacted by Legislature in 1988
  - Legislative designation of certain rivers for special protection, based on local initiative
- Instream flow protection measures added to RMPP and first rivers designated in 1990



## RSA 483:9-c.I

The commissioner ... shall adopt rules ... specifying the standards, criteria, and procedures by which a protected instream flow shall be established and enforced for each designated river or segment.

## RSA 483:9-c.IV

The protected instream flow levels established under this section shall be maintained at all times, except when inflow is less than the protected instream flow level as a result of natural causes ...

# Instream Flow Rules (RSA 483:9-c)

- Work on Flow Rules began in 1990
- DES advised by RMAC
- Draft rules in 1994, 1995, 1996 & 1999
  - Almost to rulemaking in 1996:
    - Round 1: Statewide trigger flows, and AWUs only on designated river segments
  - Restarted rule development in 1998
    - 1999 Round 2: Reworked version of Round 1, \$50M+ estimated fiscal impact
  - 2001 Round 3: Watershed specific protected flows and management plans – precursor to pilot program
- Extensive public outreach (more than 50 presentations to interested parties)
- Applies only to designated rivers

# Some Major Idea Contributors!

## (Thanks)

- Ken Kimball – AMC
- Tim Fortier – BIA
- Ted Sutton – Loon Mtn
- Attitash – Bear Peak
- John McPhail – Gold Star Nurseries
- John Forrestall – Concord Waterworks
- Jim MacCartney – DES
- Vern Lang – USF&W
- Steve Densberger – Pennichuck WW
- Bob Beaurivage – Manchester WW
- Monadnock Mtn Spring Water
- Muriel Lajoie – Monadnock Paper
- Ct. R. Joint Commissions
- Rick Chormann – DES
- Rep. Richard Cooney – SB330 Study Committee



# Main Idea of the Pilot Program

- Administrative framework for applying Public Trust and Riparian Doctrines
- River-specific Protected InStream Flows to implement Public Trust Doctrine
- Water Management Plan to implement Riparian Doctrine
- Groundwater withdrawals that affect instream flows are included (within 500')
- Legislative oversight and approval before general application to other designated rivers

# Pilot Program

- Chapter 278, Laws of 2002 sets requirements for committees and pilot program
- ISF Rules adopted in May 2003
- Funding for Souhegan River studies in state FY 04 budget

# What is Protected?

- IPU – Instream Protected Uses listed in RSA 483:9-c,I
- OC – Outstanding Characteristics listed in RSA 483:1
- R – Resources listed in RSA 483:6,IV,(a)
- Designated Uses under the Clean Water Act cited in NHDES CALM
  - Aquatic life, primary and secondary contact recreation, drinking water supply, ...
- Put it all together and you get IPUOCR

# Env-Ws 1900 Instream Flow Rules

- Apply to designated reach and upstream watershed
- The rules include:
  - Protected Instream Flow (PISF) study
  - Water Management Plans (WMPs)
  - Apply to Affected Water Users (AWUs) and Affected Dam Owners (ADOs)
  - “de minimis” use = 5% of 7Q10 - no complete cutoff
  - Public hearings

# Env-Ws 1900 Instream Flow Rules

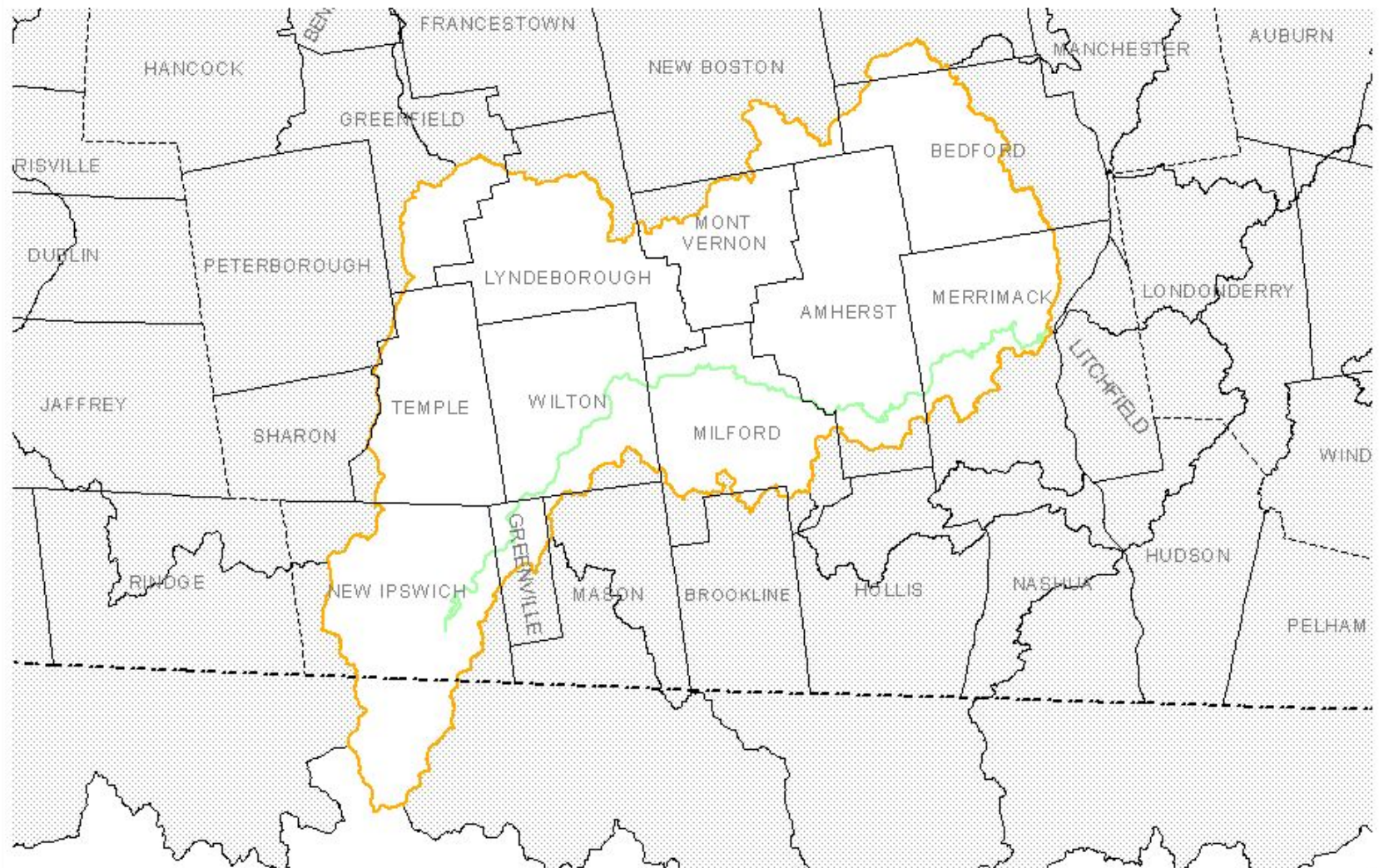
- AWUs – water users required to be registered and having a withdrawal or return location within 500 feet of a designated river or tributary
- ADOs – dam owners with an impoundment with a surface area greater than 10 acres

# Souhegan-specific information





# Souhegan River Watershed Management Planning Area



## Legend

Souhegan Designated Reach

Political Boundaries

State boundary

County boundary

Town boundary



4 0 4 8 Miles

# Souhegan River WMPA

- Covers 220 miles<sup>2</sup> and extends into Mass.
- 31 miles of Designated Reach
- Rural, rural-community, and community segments; no natural segments
- Three stream gages – 2 active
- 23 affected dams
- 18 affected water user facilities with 34 sources or discharges

# Souhegan WMPA-specific data

- Maps
- Lists of AWUs and ADOs with data
- Stream gage data
- Souhegan River Nomination – May 1999
- NHDES Souhegan River Watershed Report – May 1997
- Biomonitoring and WQ stations measured by volunteers and NHDES
- Milford-Souhegan Aquifer groundwater model

# Souhegan WMPA AWUs

<b>AFFECTED WATER USERS OF THE SOUHEGAN WMPA</b>		
<b>USERID</b>	<b>USERNAME</b>	<b>FACILITY</b>
20190	AMHERST COUNTRY CLUB	AMHERST COUNTRY CLUB
20206	BUCKMEADOW GOLF CLUB	BUCKMEADOW GOLF CLUB
20047	GREENVILLE TOWN	GREENVILLE WATER WORKS
20086	GREENVILLE WWTF	WASTE WATER TREAT PLANT
20230, 20228 and 20229	GREENWOOD ALDEN T	CHAMBERLAIN FALLS HYDRO, WATER LOOM FALLS HYDRO and OTIS FALLS
20100	MILFORD WATER WORKS and WWTF	MILFORD WATER WORKS and WASTE WATER TREAT PLANT
20621	MONADNOCK MOUNTAIN SPRING	MONADNOCK MOUNTAIN WATER
20218	NH FISH & GAME	MILFORD FISH HATCHERY
20000 and 20659	PENNICHUCK WATER WORKS	AMHERST VILLAGE DISTRICT and SOUHEGAN WOODS
20383	PETER DE BRUYN KOPS	PETER DE BRUYN KOPS
20281	PIKE INDUSTRIES	WILTON QUARRY
20681	PILGRIM FOODS	PILGRIM FOODS
20624	PONEMAH GREEN GOLF COURSE	PONEMAH GREEN GOLF COURSE
20523	SOUHEGAN WOODS GOLF CLUB	SOUHEGAN WOODS GOLF CLUB
20065	WILTON WATER WORKS	WILTON WATER WORKS

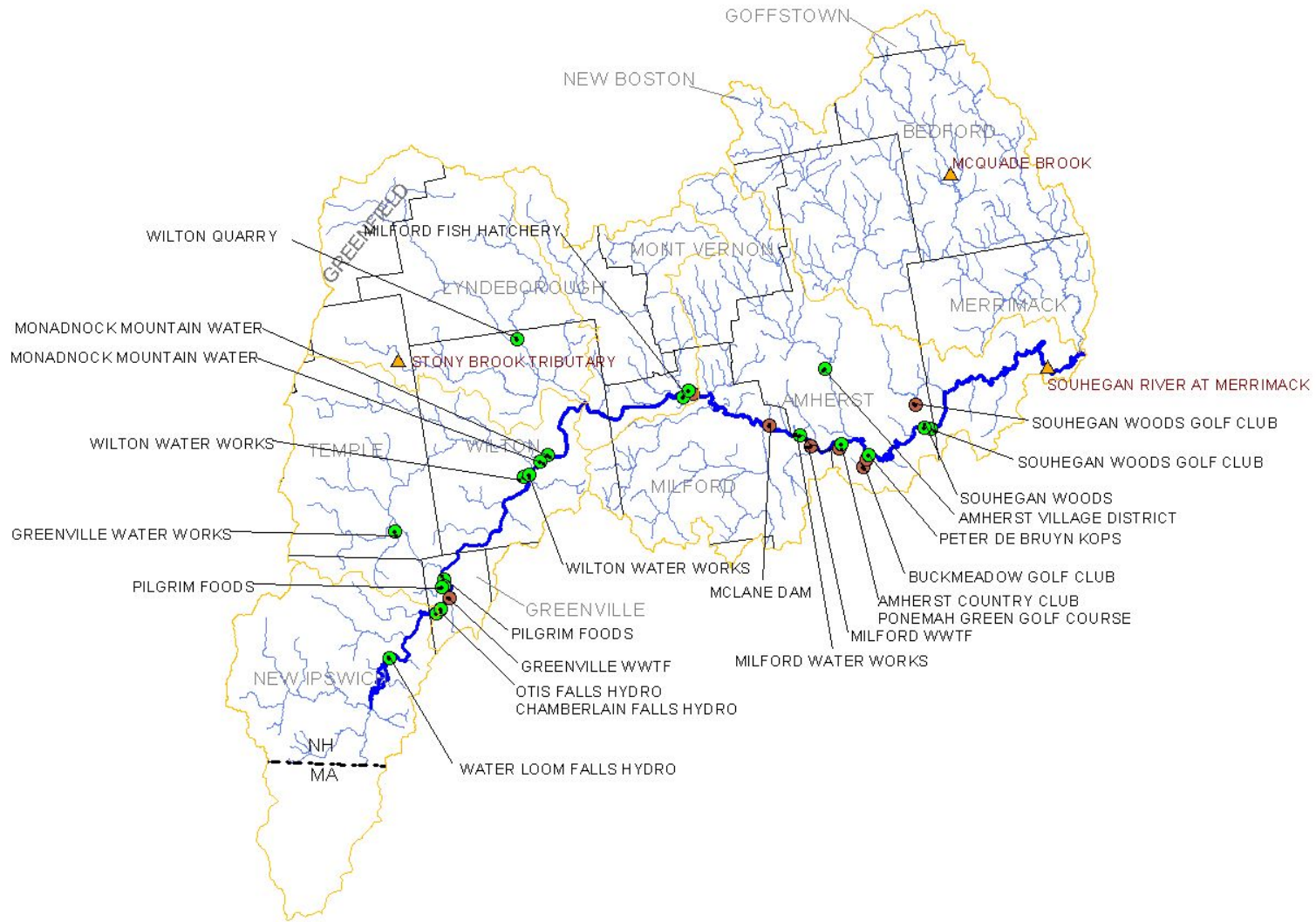


# Souhegan Affected Water User Facilities: Source and Discharge Locations

## Legend

### Souhegan Water Users

- Source
- Discharge
- ▲ Stream Gages
- Designated Reach
- Hydrology
- State boundary
- Town boundary
- Souhegan WMPA



The coverages presented are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. NHDDES is not responsible for the use or interpretation of this information. Not intended for legal purposes. Water users database last updated January 2004.

Map produced January 22, 2004



0 1 2 3 4 Miles

# Souhegan WMPA ADOs




<b>AFFECTED DAM OWNERS OF THE SOUHEGAN WMPA</b>		
<b>DAMCODE</b>	<b>OWNER</b>	<b>NAME</b>
007.09	FREESTYLE FARM LLC	VIJVERHOF POND DAM
175.09	MR ALDEN T GREENWOOD	WATERLOOM POND DAM
147.17	MR DAVID E BLACKMER	BURTON POND DAM
175.23	MR DAVID SOMERO	WHEELER POND DAM
147.31	MR HERMON S SWARTZ	SWARTZ POND DAM
007.15	MR MELIO RICCITELLI	DREAM LAKE DAM
147.28	NH WATER DIVISION	SOUHEGAN SITE 8 DAM
147.36	NH WATER DIVISION	SOUHEGAN SITE 8 CEMETARY DIKE
147.37	NH WATER DIVISION	SOUHEGAN SITE 8 SOUTH DIKE
254.34	NH WATER DIVISION	SOUHEGAN RIVER SITE 33 DAM
254.30	NH WATER DIVISION	SOUHEGAN RIVER SITE 15 DAM
234.11	NH WATER DIVISION	SOUHEGAN RIVER SITE 12ASOUTH
175.20	NH WATER DIVISION	SOUHEGAN RIVER SITE 13 DAM
175.21	NH WATER DIVISION	SOUHEGAN RIVER SITE 35 DAM
175.19	NH WATER DIVISION	SOUHEGAN RIVER SITE 19 DAM
234.16	NH WATER DIVISION	SOUHEGAN RIVER SITE 12A NORTH
156.01	PENNICHUCK WATER WORKS	MERRIMACK VILLAGE DAM
175.03	PRATT POND ASSOCIATION	PRATT POND DAM
007.04	RANDALL AND KIMBERLY COOPER	LINCOLN POND DAM
159.04	TOWN OF MILFORD	OSGOOD POND DAM
254.05	TOWN OF WILTON	STONEY BROOK DAM
254.09	TOWN OF WILTON	NEW WILTON RESERVOIR DAM
007.01	US AIR FORCE STATION NEW BOSTON	JOE ENGLISH POND DAM



# Souhegan Affected Dams



## Legend

-  Dams
-  Stream Gages
-  Designated Reach
-  Hydrology
-  State boundary
-  Town boundary
-  Souhegan WMPA


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Map produced January 22, 2004

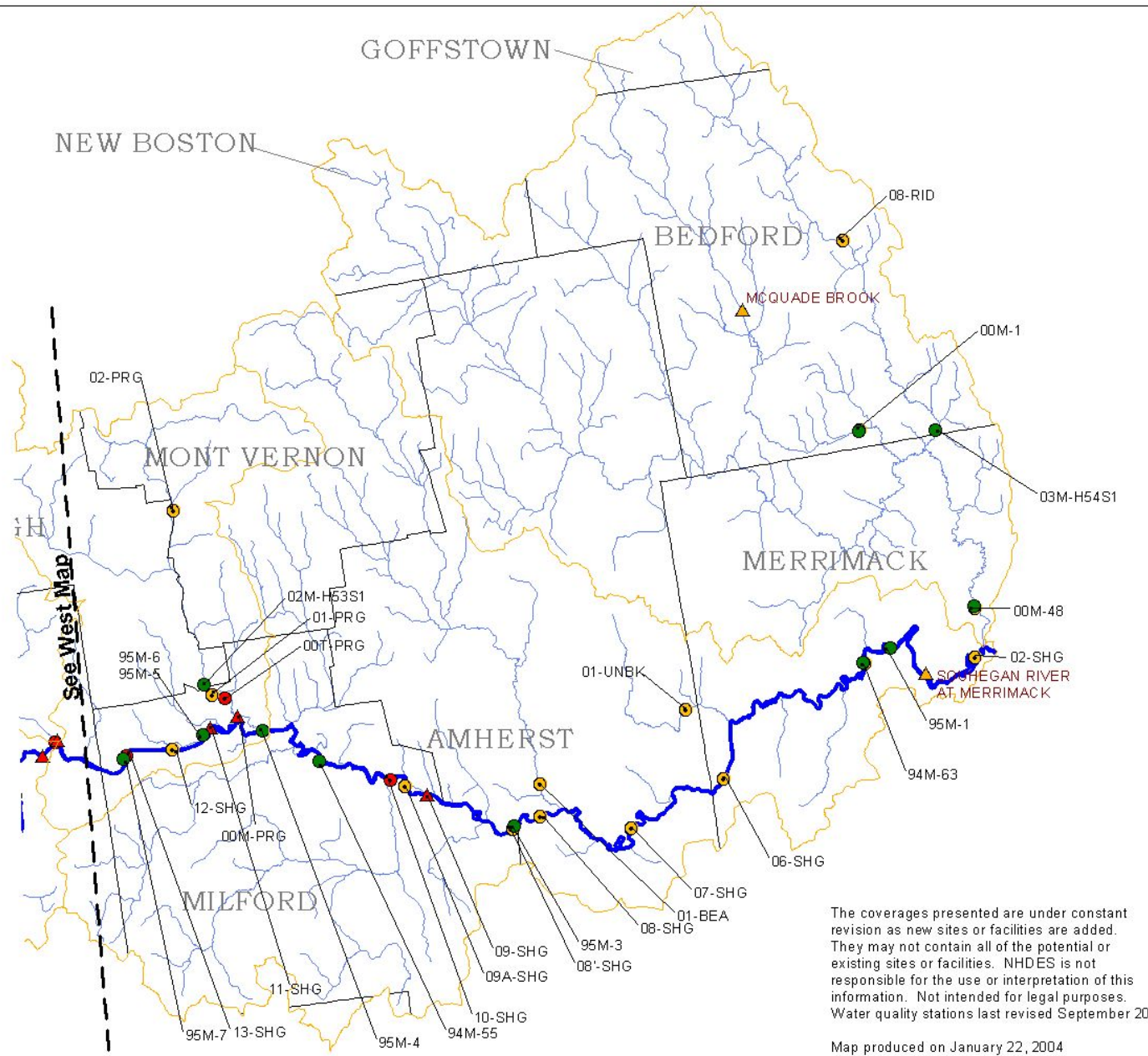
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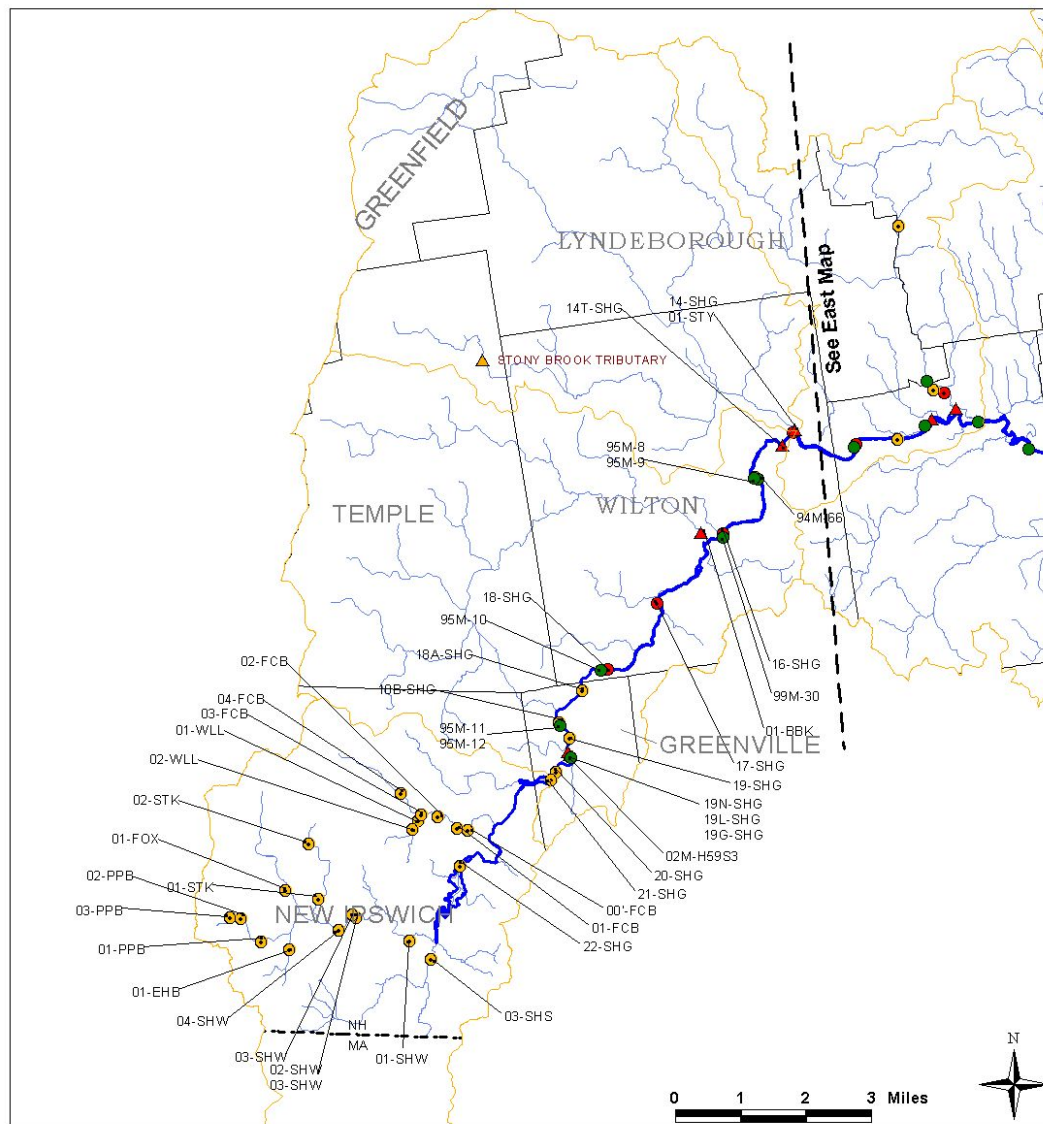
0 1 2 3 4 Miles



# Souhegan Water Quality Station Locations (East)



# Souhegan Water Quality Station Locations (West)



## Legend

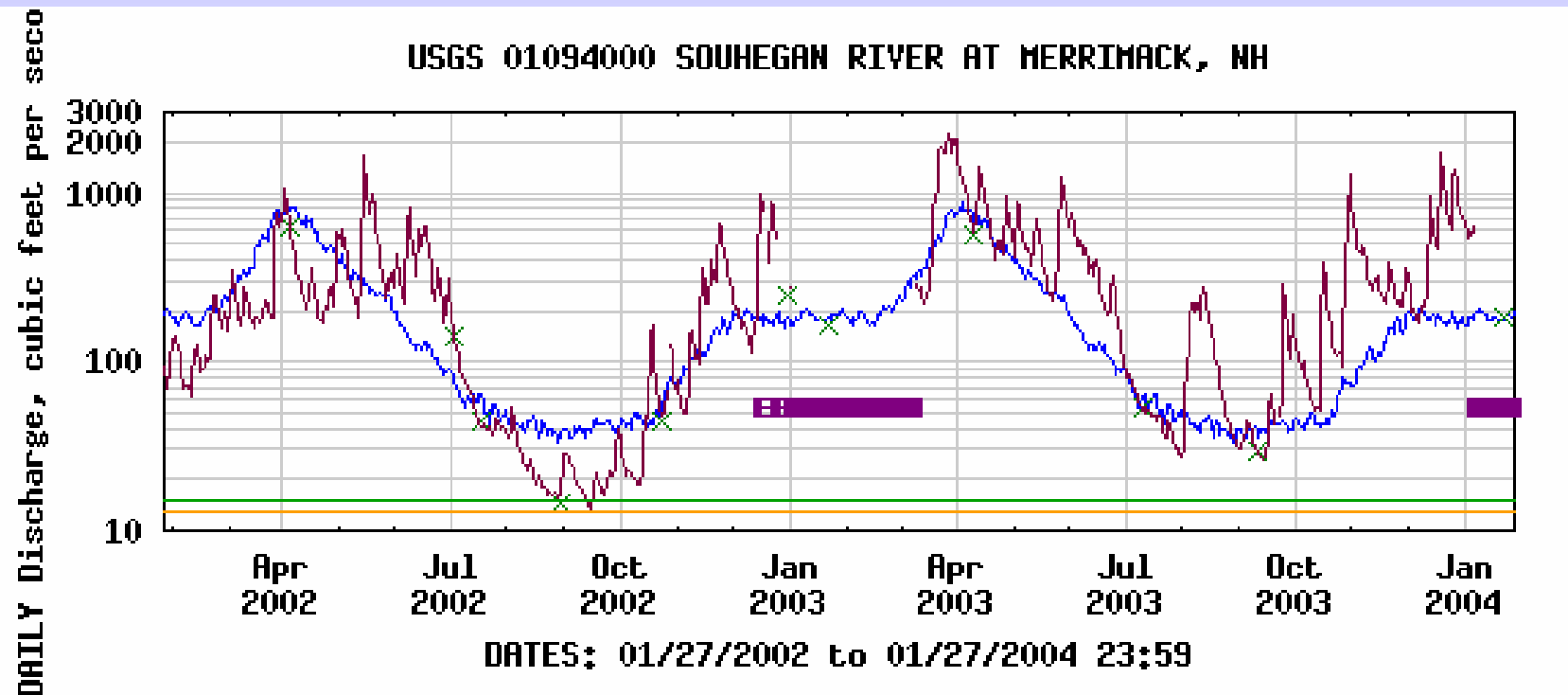
- |                          |                  |                      |
|--------------------------|------------------|----------------------|
| ● Biomonitoring Stations | ■ VRAP/ARMP      | ~ Designated River   |
| ○ ARMP                   | ★ VRAP/ARMP/TMDL | ~ Hydrology          |
| ● ARMP/TMDL              | ✚ VRAP/TMDL      | - - - State boundary |
| ▲ TMDL                   | ▲ Stream Gage    | ~ Town boundary      |
| ✚ VRAP                   | □ Souhegan VMMPA |                      |

The coverages presented are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes. Water quality stations last revised September 2003.

Map produced on January 22, 2004

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# 2-year hydrograph of Souhegan River

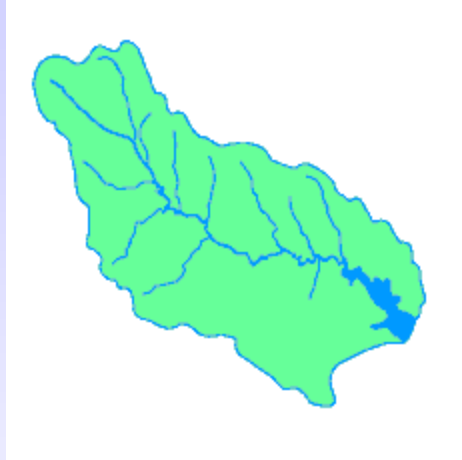


## EXPLANATION

- MEDIAN DAILY STREAMFLOW BASED ON 68 YEARS OF RECORD
- × MEASURED Discharge
- DAILY MEAN DISCHARGE
- Flow at station affected by ice
- 99% Flow duration
- 7-day, 10-year low flow



# PISF and WMP activities



# Protected Instream Flow Study Objectives

- Identify IPUOCR entities
- Evaluate IPUOCR flow needs
- Document results of PISF study



# Contractor activities for PISF

- Research documents to identify IPUOCR
- On-stream survey for IPUOCR
- Identify and use PISF methodologies that match IPUOCR
- Prepare draft Proposed PISF document
- Take Proposed PISF document before public
- Revise Proposed PISF to final document

# Water Management Plan

## Objectives

- Create three sub-plans with a range of alternatives with costs
  - Water conservation plan (demand management)
  - Dam management plan (supply management)
  - Water use plan (operational management)
- Select actions for each ADO and AWU to meet PISF and create implementation schedule

# Contractor activities for WMP

- Use established PISF to evaluate DR
- Interview AWUs and ADOs
- Develop list of alternatives for each sub-plan
- Develop costs for each alternative
- Select alternatives that meet PISF & WQ rules
- Propose draft WMP
- Take Proposed WMP document before public
- Revise Proposed WMP to final document

# TRC and WMPAAC responsibilities



# Technical Review Committee

- *Qualifications:* Education or experience in water resources management or protection
- *Duties:* - Advise the department on the preparation and conduct of the protected instream flow studies
  - Submit annual progress reports

# WMPA Advisory Committee

- *Qualifications:* Members shall represent a local entity
- *Duties:*
  - To provide information towards the completion of protected instream flow studies and water management plans
  - To review and comment on WMPs
  - Submit annual progress reports



# Committee role in PISF and WMP



# Committee role in Souhegan ISF contracting

- Convene committee and select RFQ/RFP review team members
- Participate in short list selection of RFQ submittals
- Review and advise DES on RFP (scope of work for the PISF and WMP process)

# TRC role in Souhegan PISF

- Represent stakeholders
- Advise DES on PISF study methods and results
- Review and comment
  - IPUOCR entities list
  - GW withdrawal assessment method (TRC)
  - PISF methods (TRC)
  - Draft Proposed PISF values
- Public hearing

# WMPAAC role in Souhegan Pilot

- Represent stakeholders
- Provide information to DES toward PISF implementation and WMP development
- Review and comment on WMP
  - Alternatives for WMP sub-plans (list and costs)
  - Draft Proposed WMP (schedule added to alternatives)
- Assist DES in hearings and negotiations on PISF and WMP

